

CLAIMS

1. A recording medium for storing system stream including video elementary stream generated by encoding video information and audio elementary stream generated by encoding audio information with the video elementary stream and the audio elementary stream being multiplexed, wherein

the system stream is allowed to have a first format (TS) and a second format (PS),

the first format (TS) has a structure for storing data segmented in first packets, the second format (PS) has a structure for storing data segmented in packs, the pack is larger than the first packet in size,

the first packet stores segmented second packet, the second packet stores video information and audio information and includes at least one audio frame,

the first format (TS) is allowed to have a constrained format used for converting the system stream from the first format (TS) to the second format (PS),

according to the constrained format,

a predetermined number of first packets are grouped and managed as a multiplexing unit, and total data size of first packets managed in the multiplexing unit is smaller than data size of the pack, and

the first one of complete audio frames in the multiplexing unit is the first one of audio frames in a payload of the second packet.

2. The recording medium according to claim 1, wherein, according to the constrained format, the video elementary stream

and the audio elementary stream are multiplexed to the system stream in the same order as a multiplexing order in the second format (PS) that is converted.

5 3. The recording medium according to claim 1, wherein the elementary stream is encoded in an encoding method which is allowed for both the first format and the second format.

10 4. The recording medium according to claim 1, wherein the system stream includes encode information that indicates whether or not the first one of complete audio frames in the multiplexing unit is the first one of audio frames in a payload of the second packet.

15 5. The recording medium according to claim 4, wherein the encode information is also included in management information for managing data stored in the recording medium as well as in the system stream.

20 6. An information recording apparatus for encoding video information and audio information to system stream and recording the system stream to a recording medium,

 the system stream being allowed to have a first format (TS) and a second format (PS),

 the information recording apparatus comprising:

25 a first encoding section operable to encode video information and audio information in a predetermined encoding manner according to the first format (TS) to generate video elementary stream and audio elementary stream;

30 a second encoding section operable to perform system-encoding by multiplexing the video elementary stream and the

audio elementary stream to generate the system stream according to the first format (TS);

a control section operable to control the first encoding section and the second encoding section,

5 the first format (TS) is allowed to have a constrained format used for converting the system stream from the first format (TS) to the second format (PS),

wherein the control section controls the first and second encoding section so that each encoding is done according to the constrained format, and

10 the first format (TS) has a structure for storing data segmented in first packets, the second format (PS) has a structure for storing data segmented in packs, the pack is larger than the first packet in size,

15 the first packet stores segmented second packet, the second packet stores video information and audio information and includes at least one audio frame,

according to the constrained format,

a predetermined number of first packets are grouped and managed as a multiplexing unit, and total data size of first packets managed in the multiplexing unit is smaller than data size of the pack, and

20 the first one of complete audio frames in the multiplexing unit is the first one of audio frames in a payload of the second packet.

7. The information recording apparatus according to claim 6, wherein, according to the constrained format, the video elementary stream and the audio elementary stream are multiplexed to the system stream in the same order as a multiplexing order in the second

format (PS) that is converted.

8. The information recording apparatus according to claim 6,
wherein the control section controls the first encoding section so
5 that the elementary stream is encoded in an encoding method which is
allowed for both the first format and the second format.

9. The information recording apparatus according to claim 6,
wherein the system stream includes encode information that indicates
10 whether or not the first one of complete audio frames in the
multiplexing unit is the first one of audio frames in a payload of
the second packet.

10. The information recording apparatus according to claim 9,
15 wherein the encode information is also included in management
information for managing data stored in the recording medium as well
as in the system stream.

11. An information recording method including encoding video
20 information and audio information to system stream and recording the
system stream to a recording medium,

the system stream being allowed to have a first format
(TS) and a second format (PS),

the first format (TS) is allowed to have a constrained
25 format used for converting the system stream from the first format
(TS) to the second format (PS),

the first format (TS) has a structure for storing data
segmented in first packets, the second format (PS) has a structure
for storing data segmented in packs, the pack is larger than the
30 first packet in size,

the first packet stores segmented second packet, the second packet stores video information and audio information and includes at least one audio frame,

the information recording method comprising:

5 encoding video information and audio information in a predetermined encoding method according to the constrained format (TS) to generate video elementary stream and audio elementary stream;

10 performing system-encoding by multiplexing the video elementary stream and the audio elementary stream according to the constrained format (TS) to generate the system stream; and

 grouping and managing a predetermined number of first packets as a multiplexing unit,

15 wherein total data size of first packets managed in the multiplexing unit is smaller than data size of the pack, and

 the first one of complete audio frames in the multiplexing unit is the first one of audio frames in a payload of the second packet.

20 12. The information recording method according to claim 11, wherein, the video elementary stream and the audio elementary stream are multiplexed to the system stream in the same order as a multiplexing order in the second format (PS) that is converted.

25 13. The information recording method according to claim 11, wherein the elementary stream is encoded in an encoding method which is allowed for both the first format and the second format.

30 14. The information recording method according to claim 11, wherein the system stream includes encode information that indicates

whether or not the first one of complete audio frames in the multiplexing unit is the first one of audio frames in a payload of the second packet.

- 5 15. The information recording method according to claim 14, wherein the encode information is also included in management information for managing data stored in the recording medium as well as in the system stream.